Experiences with control of cactoblastis in Santiago del Estero, Argentina from 1998 to 2003

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As part of a genetic improvement program for Opuntia ficus indica in Santiago del Estero, from 1998 to 2003 it was necessary to develop effective measures to control cactoblastis damage to seedlings from full sib crosses. Three genetic improvement trials of 0.2 to 0.5 ha were located approximately 500 meters apart. All fields were virtually weed free due to a program of Diuron and glyphosate applications. The field that had a 4 meter weed free perimeter had little damage with several Sevin insecticide applications per year. One field had very severe damage to the outside row. This outside row was less than 4 m from 20 m tall Casuarinas and Populus trees, and had abundant leaf litter to within 1 m of the tree trunk. It is postulated that leaf debris from the mature trees provided a protected environment for the larvae to pupate and resulted in the increased damage.

The last severe damage from cactoblastis in the fall was observed 10 May (=10 November in northern hemisphere) and the first significant deposition of egg sticks was observed on 12 August (=12 February in northern hemisphere). Thus it was necessary to use approximately 3 applications of 1.2 g/L carbaryl with a penetrant in the spring and the fall. Applications were ceased 20 days prior to fruit harvest and initiated again after fruit harvest. The pyrethroid cipermetrina (Cypermethrin) when used in Argentina caused significant irritation of the skin. Due to 3-4 m heights of fruit cacti in Argentina and the lack of resources of local people for adequate protective clothing, it is important to choose an insecticide with minimal dermal irritation. For this reason, Sevin, with virtually no dermal irritation, was routinely used for cactoblastis control.

When pruning cactus with cactoblastis damage, approximately 14 days after Sevin application(1 g/L carbaryl) with a penetrant, many of adult larvae inside the cladode were dead. It is possible that slow diffusion of the carbaryl into the cladode eventually killed the larvae. It would seem prudent to measure diffusion of various insecticides (with the aid of radioactive C^{14} tracers) from the cladode surface to the interior as influenced by new penetrating surfactants.

Research examining insecticides for control of Cactoblastis, should also take into account the need to control cochineal, and insect vectors for phytoplasmas.

In the extended drought in northern Mexico from 1993 to 1996, more than 650,000 cattle died (Journal Professional Association for Cactus Development 2: 3-9), but ranchers with cactus did not suffer as great as losses as those who supplies of cactus ran out and the reproduction rates and animal production levels were greater for animals that received cactus supplements

On several Texas sites, Opuntia comprised more than 50% of the deer diet in the winter (Southwest. Nat. 24:297-310: J. Range Manage. 32:175-178), about 90% of the winter

diet of the collared peccary (Gallagher, M.S. Thesis, 1981, Texas A&M Univ) and was very important in the diet of the Texas tortoise (Bull. Fla. State Museum 13:141-203).

Should a long prolonged drought occur in northern Mexico and southwestern United States at the same time as extensive destruction of wild cactus due to Cactoblastis, the effects on both wildlife and domestic stock (especially in Mexico) could be devastating ecologically and financially with losses in the hundreds of millions of dollars.

Abstracts from Peter Felker's lab notebook in Santiago del Estero, Argentina regarding cactoblastis.

6 April 2000 sprayed with Sevin.
29 August 2000 cactus eggs sticks on mapping population and hybrids
8 November 2000, found all larvae dead inside cladodes, Diego had sprayed pads two weeks before when I was in Africa with 30 ml of 480 g/l Sevin in 12 liters of water or 1.2 g/L.
10 May 2001, Noticed serious cactoblastis in hybrids. Used 5 tablespoons of Sevin in 12 liters with 2 capfuls of penetrant/sticker. Previous spray was 12 March. Put on all the hybrids, half of mapping population and O ellisiana.
28 August 2001, lots of cactoblastis in the hybrid trial so used 5 tablespoons of Sevin powder and 1 capful of penetrant/sticker and spray both sides of plants with 12 liter backpack spray. Takes 2.5 backpacks for hybrid trial.

6 March 2002, Worst cactoblastis attack of the year. Small plants in hybrid trial near the end of row of big Alamo (poplar) trees had as many as 10 egg sticks. Sprayed only the hybrid trial with 4 backpacks of 30 ml of 480 g/l Sevin formulation with a surfactant. The week of 6-10 March Diego sprayed the mapping population and the trial of 18 with Sevin too.

21 June 2002.
The damage from the cactoblastis resulting from the attack noted on 6 March was very bad. Young cactus at the edge of the field that had 5 cladodes and 1.2 -1.5 m tall were severely damaged. Remember seeing egg sticks 6 March but no damage. Evidently the Sevin did not control this infestation- maybe because no sticker was used at this time to financial (personal crises). Also on this date there were numerous live cactoblastis orange and striped worms inside cactus in spite of -5C and -3C temperatures on various days. So these light freezes did not kill the larvae inside the pads.

12 August 2002.
Cactoblastis in hybrids
Plant #1 in 1277 x 1321 had 3 cactus sticks this day.

Sevin for cactoblastis
15 Nov 2002. Sprayed 30 ml of flowable Sevin + coadjuvante/12 liters on all of the hybrids. Used 36 liters of mix.

21 Jan Cactoblastis
Never has the cactoblastis been so bad in the hybrids. This time change to cipermethrin and penetrant/sticker. Spray one backpack on the worst parts of the hybrids. Use a concentration of 5 ml/12 liters in backpack
23 January 2003. Sprayed all of hybrids with 7.5 ml cipermethrina plus penetrant/sticker. Was the worst infestation of the year.
28 Jan 2003. Kiko Lopez says Sevin is more toxic to cactoblastis than cipermethrina so change to 30 ml Sevin + penetrant/sticker per backpack.

27 Feb 2003.
Lots of cactoblastis in hybrids along the row of tamarisks and near corner with the Alamos (poplars). Spray with 30 ml Sevin/backpack plus penetrant/sticker.